1: Bowen C-4 (1945-1947) 1951 MK2 Maritime Arabs MK2

feet in diameter, it is easily seen under water, and thus more easily avoided than the *dawl*. The Arabs have no fear of the sea turtle and they relate that when they find one of these on the pearl banks, they ride it to the surface by grabbing it behind the neck and directing it upward.

But the dangers from sharks and devilfish (rays) are slight compared to the physical danger resulting from simply driving oneself past the limit of human endurance. The "bends" are a common affliction among the divers and may cause severe pains in the joints, paralysis, or even death. Suppuration of the eardrums and rheumatism are also common. The divers may lose blood from surfacing too quickly or from staying under too long; Frederick Simpich tells of seeing a man come up from a 10-fathom dive bleeding at the nose as if someone had hit him with a ball bat.[21] Whitelock states that the divers of the Trucial Coast were very emaciated and suffered from inflamed eyes, which they treated with antimony.[22]

Divers never eat while working, except for a sip of tea or water, as food would cause nausea. When the sun has sunk so low that diving stops, they eat a few dates or a little rice and drink a little tea, but that is all. This is one of the reasons why they become so weakened and emaciated during a season. Sleep is the only energy builder the divers have.

OPENING THE OYSTERS

With dawn the first activity of the day is the opening of the oysters caught the day before. By this time the oysters have been out of the water long enough for their shells to open, so that one does not have to fight them. The oysters are not divided according to divers, but are simply piled in sacks on the deck, so that no one knows exactly who caught the one that may contain the great pearl. After the valves are parted, the openers knead through the flesh, extract any pearls, and throw the shells and the meat overboard. Less than one-third of the oysters yield pearls and these are mostly "seed pearls," those very small irregularly-shaped pearls which might well be called "pearl dust."

[21] F. Simpich, *National Geographic Magazine*, vol. 36 (1919), pp. 369–93.
[22] H. H. Whitelock, *op. cit.*, pp. 38, 44.

3: Bowen. C-4 (1945-1947) 1951 MK2 Maritime Arabs MK2

384 MARINE INDUSTRIES OF EASTERN ARABIA

RICHARD LEBARON BOWEN, JR.

361 226 503 315 THE Persian Gulf coast of Saudi Arabia is desolate in the extreme: in many places one travels along the beach for dozens of miles without seeing a living soul. But there is a sprinkling of old coastal towns, whose inhabitants for the most part gain their livelihood from the sea. Among them are Jubail, long a port of entry for the capital city of Riyadh, 235 miles inland; Dammam, seaport for the Qatif and Safwa oases (a deep-water pier has recently been constructed at Dammam); Al Khobar and Oqair, ports for the great oasis of Hofuf (Hasa). To these have been added of late years Arabian American Oil Company settlements at Ras al Mish'ab (a construction camp and port facilities), Nejma (a refinery and camp), and Ras Tanura (pipeline terminus and cargo wharf).

FISHING

226 262 Foremost among the marine activities of the older coastal towns is fishing. Although there are far fewer species of fish in the Persian Gulf than in the Indian Ocean, they are present in greater numbers, particularly the porgies, than one might expect in so warm a body of salt water, and fish form a welcome addition to the diet in a land where food is pitifully scarce.

226 857 504 Fishing methods range from a simple hand line to large and complicated fishweirs. On land the hand line is used mainly by small boys, who, like the small fry of any other country, enjoy fishing. Since there is an almost complete lack of jetties and piers, these young fishermen have to stand on the beach and heave their weighted lines as far as they can (Fig. 2). When the fish are running, these youngsters line the shores, and their catch is sometimes sizable. Hand lines are indispensable on every dhow and are thrown out as soon as the boat is in open water.

A more advanced type of fishing uses the throw net—a circular net about 16 feet in diameter made of quarter-inch-mesh netting. The periphery is weighted with small lead weights, then doubled back toward the center and tied at 12-inch intervals to form a continuous pocket some six inches deep. The fisherman walks in knee-deep water at low tide, holding his net —which he has folded and gathered with the perfection of a parachutist—

➤ DR. BOWEN is a chemical engineer now resident in Providence, R. I. His field experience in Arabia includes three years with the Arabian American Oil Company (1945 to 1947) and some months as technical and engineering adviser to the Arabian expedition of the American Foundation for the Study of Man (1950).

3: Bowen C-4 (1945-1947) 1951 MK2 Maritime Arabs MK2

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FIG. 1—Location map. Inset shows places mentioned in the text.

with both hands and his teeth. When he spots a school of fish, he flings the net into the air with one arm (much like a man sowing seed) and a snap of his head. The net opens out flat and drops on the water; the weights carry the outside to the bottom faster than the center. The fisherman then picks up the net by the center, and any fish under it immediately swim toward the edge and are trapped in the pocket. He keeps pulling the center through one hand and folding it up, and when he has finally gathered in the whole net, he carefully removes the fish flopping around in the pocket, puts them in a palm-leaf basket, and starts all over again. 226

The Arabs also use wire and palm-leaf basket fishtraps (Fig. 4). These are oval-shaped, from two to five feet long, with a cone-shaped entrance on each end through which the fish cannot squeeze out. The traps are usually baited with cuttlefish, forbidden to the Arabs by a strict interpretation of 224 262

3: Bowen C-4 (1945-1947) 1951 MK2 Maritime Arabs MK2

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FIG. 2—Arab boys fishing with hand lines. When the fish are running, small boys often line the shore by the dozen.

the Koran, but a particularly juicy delicacy from a fish's point of view. The Arabs dot the shallow water with these basket traps at points where feeding appears good; the edges of small coral reefs are favorite spots.

The Arab fisherman never marks his traps with floats as the American lobster fisherman does, because he fears they will be plundered; he must remember the location of each trap. Where he cannot see the bottom, he suspends a float several feet below low-tide level. To tend his traps, this Arab rows his small boat up and down at low tide until he spies his trap or float and hooks it with a pole; in shallow water he sometimes dives for the trap. I once watched a crew of three fishermen off Ras Tanura; they seemed to know the approximate location of each trap in the 30 feet of water, but they spent as much as a quarter of an hour peering into the water to find each submerged float. These men used the largest wire traps I saw in the Persian Gulf, and their catch at times was astounding.

The Arabs on the east coast of Arabia seldom use seines, though on Bahrein Island I saw several drying in the sun. However, large communal seines have apparently been used on the Batinah Coast of Oman; for Thomas[1] relates that "there, a hundred fishermen were hauling ashore a communally owned net, the vast extent of which was marked by distant bobbing floats . . . In contrast, a lone fisherman, far out, monotonously cast his circular hand-net." On the Hadhramaut coast of South Arabia the fishermen also use large seines. At Mukalla I saw a two-and-a-half-inch-mesh net 190 feet long and 20 feet wide; a narrower net had a mesh of five inches. These wide-mesh nets are used for sharks. Farther east on this coast, at Jazir Bay, the fishermen set their seines by swimming out to sea on inflated sheepskins!

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[1] Bertram Thomas: Alarms and Excursions in Arabia, London, 1931, p. 156.

S: Bowen C-4 (1945-1947) 1951 MK2 Maritime Arabs MK2

stinging tentacles that can easily put out an eye. There is also a needle urchin (*Diadema*), first reported from the Persian Gulf in 1949.[9] This urchin has spines more than a foot long, which can cause nasty, slow-healing wounds. However, as the urchin is several feet in diameter, black, and slow-moving, it is more easily avoided than the dawl.

Pearl divers suffer from a variety of diseases, most of which can be directly traced to their occupation. Open sores and skin ulcers result from encounters with the dawl and scrapes against coral and other sharp objects. Suppuration of the eardrums, rheumatism, and nosebleeds are common. Inflamed eyes are always a sign of the pearl diver. Persian Gulf divers are more susceptible to the "bends" than divers who use suits, since they must surface as rapidly as possible.

Divers never eat while they are working. When the day's diving is finished, the diver has some rice, dates, and tea, but not much else; sleep is his only energy builder. Every 10 days or so the divers get a rest, and every three weeks or so the dhows put in for food and water unless they have been revictualed at sea.

In recent years Ras Tanura has become a center of activity for the pearling fleet off its shores; for the oil company's installations can now pump an abundance of fresh water into the water tanks of the dhows much faster than it can be transferred by waterskins. The larger vessels anchor for the night on the banks; the smaller vessels sometimes take shelter if it is available. Some vessels of the pearling fleet replenish their water supply from the submarine springs that gush into the Persian Gulf in numerous places along the Arabian littoral. Relatively fresh water can be brought up in a waterskin by a diver. One of these springs, marked by a spar buoy, is to be found a few miles north of Jubail.

The first duty of the day on a pearling dhow is opening the previous day's oysters, which are heaped on deck in a large pile so that no one knows who found the oyster which may produce the rare gem. The muscles of the oysters relax enough overnight so that it is not difficult to open them. Less than a third of the oysters yield pearls, and these are usually only very small seed pearls.

Pearls are sometimes bought on the pearl banks by brokers who travel around in their own boats trying to get the best pearls before other brokers hear of them, and trying to get a valuable pearl before a nakhoda realizes its value. But whether the pearls are sold on the banks or at Bahrein, they

[9] A. H. Clark and R. LeB. Bowen, Jr.: Echinoderms of Tarut Bay and Vicinity, Saudi Arabia, *Amer. Museum Novitates*, No. 1390, 1949.

cargo of fish if the local supply is not sufficient, and fish their way down the Arabian and African coast, selling fish wherever they can. Then they do the same thing on the way back. Mukalla is a favorite stopping place on the way down to Africa; I have seen dozens of *bedans* from Sur come into Mukalla and lay out their catch of shark or tuna on the beach to dry while they beached their dhows and put a coat of shark liver oil on their hulls (see Plate 18—top and bottom). Shark is a favorite Arab food; the flesh is cut off in strips or slabs and dried, while the liver is saved for its oil. The Arabs have little use for the tails or fins of the shark, but they are all meticulously saved and eventually find their way to China via India.

Thus these fish-bearing dhows from Oman start their trading venture from their home port, carrying a product of the port, and never carry other cargo; they trade fish from Sur to Zanzibar and back. For this trade they apparently always use the primitive *bedan*, usually ranging from fifty to sixty feet in length. The Suris export dates from Oman, or go to Basra for a cargo; when carrying dates they use large *sambuks* and *baghlas*.

In contrast to Arab and Persian ships which sail along the coasts the whole way, whether going to India or Africa, Indian vessels usually sail straight from India across the ocean for South Arabia or Africa with consignments of goods from Indian exporters at specific ports. Only rarely do they carry dates; their usual cargo consists of the products of India. From the Malabar coast they may carry coir rope stuffs, coir matting, teakwood, teak dugout canoes, coconuts, spices, cement, bricks, or tiles, while from Bombay they may pick up cotton piecegoods, groundnut oil, or tea. Most of the Indian ships that voyage to Arabia or Africa come from the Gulf of Cutch; few if any craft from Bombay or the Malabar coast carry this trade today.

In vivid contrast to the Arab date cargo and Indian cargo, which is usually on consignment, the replacement cargo for the rest of the voyage for the average Arab dhow is purchased by the *nakhoda* from the profit made on the date freight, for sale at the best market. After its date cargo has been discharged, the dhow becomes a trader in every connotation of the word, picking up and selling cargoes as she coasts south along the South Arabian and East African coast.

Sometimes the *nakhoda* may pick up a small cargo of partially spoiled dates to unload on the Africans; these the crew may wrap meticulously in fancy wrappers. At Aden the dhow may take on salt, sugar (from Java), rice (from Rangoon), canned goods, hardware, kerosene, or cotton goods and prints, and from the Hadhramaut coast the cargo may be dried shark

4: Bowen C-5 (1950) 1951 MK2 Maritime Arabs MK2

point of vantage. Before every prayer the Arabs first perform the required Moslem ablutions of washing their hands, face, feet, etc., in sea water; then they go through the prayer ritual facing towards Mecca with their headcloth spread in front of them as a prayer rug. It is for determining the direction of Mecca that the compass on a large dhow is often most used! The first prayer is the dawn prayer said in the first greying light of dawn; the morning prayer takes place when the sun is close to the meridian; the afternoon prayer is called when the shadows begin to lengthen; the evening prayer is said shortly after the sun sets; finally, the night prayer ends the day several hours after sunset. The above applies to Moslem Persians and Indians as well as to the Arabs; obviously it does not apply to Hindus or sailors of other religions.

Eating is intimately related to Islamic religion for Arabs and other Moslem sailors, as their three meals come directly after the dawn, the morning, and the evening prayers. In the month of Ramadhan all faithful Moslems neither drink nor eat during the daylight hours; however, during Ramadhan all activities on land and on sea usually hit a low ebb. In other months breakfast consists for the Arabs of little more than a piece of unleavened bread with some sweet tea or water with which to wash it down. Lunch has more to offer, consisting of a mess of boiled rice with a flavoring of *ghee* (clarified butter) and curried or baked fish (if the ship has any fish aboard). The main portion of the meal is rice, which is served on a huge tray, or often simply on a palm leaf mat. The crew gathers around several of these trays or mats and makes quick work of the food, using no implements other than their right hand. They take a little fish (or meat if they are that fortunate), ball a small handful of rice around it and toss the ball deftly into their mouth, usually without losing a crumb. Nothing is ever wasted, as someone always scavenges the last morsel. Supper is essentially the same as lunch.

Often a feast is in order in port; this always calls for the slaughter of a sheep (or goat), a number of which are always kept alive on board. The sheep is usually slaughtered at dawn and is virtually dragged from its skin into a large iron pot, where it is boiled in water. The sheep or goat is the *pièce de résistance* and is served whole on a huge tray of rice. For a feast, a curry flavoring or raisins are often mixed with the rice. Various delicacies from the sheep, such as the heart, liver, lungs, and kidneys, are cooked separately and served in side dishes. As the feast starts, the sheep is methodically torn apart limb from limb and fiber by fiber. The meat is always eaten in the same manner: rice is balled around small bits of meat and tossed deftly into one's mouth with the right hand. In pulling

264 apart the sheep only the right hand may be used, as the Moslem left hand is reserved for less sanitary duties.

Towards the last of the feast, the host seizes the head, rips out the tongue, gouges out the eyes, removes the brain by smashing the head on the floor, and tosses these delicacies on the plates of the guests of honor. To one unaccustomed to the ways of the East, such a scene might look primitive and barbaric, and might remind one of a pack of animals crouched around their prey. It is true that the Arab meal lacks the decorum of a Western table and one needs more than a finger bowl when finished, but once one is accustomed to the Arab way of life, an Arab feast is most satisfying! Before and after the feast one is served the ubiquitous too-bitter Arab coffee and too-sweet tea. Often during the regular day, coffee and tea break the long hours between meals.

Villiers made a very careful survey of the food consumed for 270 days on a Kuwait *bhum* by the thirty men aboard. The total cost was 1502 rupees, which was an average of about 5.5 American cents per man per day (at a rate of exchange of $0.30 per rupee). Villiers' summary of the food consumption is as follows:[33]

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Commodity	*Cost per Unit*	*Number of Units*	*Total Weight*[34]	*Total Cost Rupees*
Dates	3 rupees/package	40	3360 lbs.	120
Rice	8-10 rs/bag	55	8900	500
Flour	6 rs/bag	12	1800	72
Sugar	12 rs/bag	7	1570	84
Dried fish			500	40
Dhall (Indian Corn)	15-16 rs/bag	6	1010	90
Salt	2 rs/bag	3	670	6
Tea			110	50
Coffee			220	30
Ghee (clarified butter)	10-20 rs/tin	9	360	120
Saleet (oil)			400	50
Pickled stuffs			100	50
Chilis			80	10
Onions			1600	50
Potatoes			480	50
Cloves (for coffee)			40	5
Ginger (for coffee)			100	5
Tomato essence			40	15
Canned milk			150	20
Sesame seeds (for bread)			30	5
Lady-fingers and peppers				5

[33] Ibid., p. 427.

[34] These weights were estimated by this author, using the average weight of the units, i.e., packages (of dates), bags (which vary for every commodity), tins, etc., that were in common use in Aden in 1950.

4: Bowen C-5 (1960) 1961 MK2 Maritime Arabs MK2

White radishes	100	5
Lemons	40	5
Other fresh vegetables	400	15
10 live sheep	1100	40
15 live sheep and goats	1500	80
		Total Rs. 1502

It should be noted that rice constitutes one-third of the cost. The other great staple at sea—fish—is not listed accurately, as most of it is caught fresh; probably between two thousand and three thousand pounds of fresh fish was eaten. It should also be noted that no charge occurs for water. The dhow will take a tank of bad water rather than pay for it.

The Arab dhow, regardless of its size, always has a fish-line overboard, and it is not uncommon to see half a dozen lines overboard. I have caught many fish myself trailing a line from a dhow in the Persian Gulf. Villiers[88] states that fishing off the whole African coast is particularly good and that it is not uncommon for the many lines trailed from a Kuwait *bhum* to net twenty to thirty large fish a day. The fish not eaten are cleaned by splitting, are pounded in salt, and then hung in the sun to dry; the sailors never bother to scale the fish.

The galley on an Arab dhow is simply a spot on the deck. The stove consists simply of an open-sided box with some sand and cooking stones on the bottom (see Plate 21—top left). The larger the dhow the larger the fire-box. The cook cooks everything here with wood fires of palm wood, brush, or driftwood.

On dhows of South Arabia and the Gulf of Aden ports there is also a bread oven. I have never seen these on dhows from the Persian Gulf or Gulf of Oman. The oven consists of a wide-mouthed pot perhaps fifteen or eighteen inches in diameter; this pot is put inside a barrel about two and one-half or three feet in diameter and the space around the pot is filled with sand (see Plate 21—top right). The barrel is firmly lashed together and then is usually securely lashed to the deck. To bake bread, the cook builds a fire in the bottom of the pot and allows it to burn down to the coals. Then he takes a flat piece of dough like a large pancake and pastes this on the inside of the pot; the heat in the walls of the pot and the coals bake the bread. This is the Arab *khubuz*, one of the staples of the Arab at sea as well as on land.

VI

It is difficult for one totally unfamiliar with the Arab East to understand the economic system of the Arabs. The tenets of Islam prevent any

[88] A. Villiers, 55, p. 130.